

## **EXHIBIT 3**

SURFACE METHANE GAS MONITORING  
OCTOBER TO DECEMBER 2017



LANDFILL TECHNOLOGIES OF ARECIBO, LLC

## **Surface Methane Gas Monitoring at the Arecibo Municipal Solid Waste Landfill**

### **Quarterly Event Report**

**Prepared by:  
Landfill Technologies of Arecibo, LLC**

**October to December 2017**

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## **Introduction**

Landfill Technologies of Arecibo, LLC has conducted on October, November and December of 2017 the surface and perimeter methane gas monitoring event at the Arecibo Municipal Solid Waste Landfill as part of the operation of the Gas Collection and Control System (GCCS). This event is also performed as part of the state and federal agency's for environment requirements for solid waste landfills.

The surface methane gas monitoring was performed by Landfill Technologies of Arecibo, LLC (LTA) personnel during December 2017, according to the following rule of the "Enmiendas al Reglamento para el Control de la Contaminación Atmosférica de la Junta de Calidad Ambiental para cumplir con los requisitos para Planes Estatales de la Sección 111 (d) de la Ley Federal de Aire Limpio para Implantar las Guías de Emisiones para Sistemas de Relleno Sanitario". This monitoring consisted of obtaining readings with a portable instrument (Thermo Scientific – TVA1000B) surface detector, please refer to Appendix A for specifications of instrument) from landfill surface, groundwater monitoring wells, gas collection system and ambient monitoring.

## **Objectives**

The objective of this event (the surface methane gas monitoring) is to ensure that the concentration of methane ( $\text{CH}_4$ ) generated by the landfill does not exceed the lower explosive limit (LEL) of methane at the facility. The LEL for this monitoring is 500 ppm (parts per million) or 25%. If the personnel of LTA detect any release that exceeds the LEL it will require notification to the owner or operator and an expansion of the monitoring program to determine the vertical and horizontal extent of the release.

## **Description**

The surface methane operational standards consist of monitoring the surface emissions of methane along the entire perimeter of the collection area and along a serpentine pattern 30 meter apart (or site specific established spacing) for each collection area using a portable surface detector (TVA1000B – Appendix A).



## **Sampling Locations and Results**

Landfill Technologies of Arecibo, LLC has created samplings locations at the Arecibo Municipal Solid Waste Landfill site where the surface emission readings have been collected. LTA presents the sampling locations at Appendix B. These readings were collected with the portable surface detector (TVA 1000B) and are presented in Appendix C.

## **Conclusions and Recommendations**

The surface emissions readings were performed for October, November and December of 2017 monitoring event from the Arecibo Municipal Solid Waste Landfill. This monitoring is part of conclusions quarterly monitoring program aimed to detect abnormal gas release at the landfill. During this event of monitoring the active area (area where the waste was deposited) was located at East side of the landfill. The LTA personnel inspect the area and there were no cracks that present a hazard to the surface.

Also the results of the surface emission monitoring for October, November and December of 2017 events by LTA personnel indicates that during that period no sampling point monitored exceed the LEL for methane which means that the landfill location does not represent a high risk of explosiveness.



LANDFILL TECHNOLOGIES OF ARECIBO, LLC

## **APPENDIX A**

### Thermo Scientific Portable Toxic Analyzer – TVA1000B Surface Emission Monitor Specifications



**Thermo Scientific**  
**TVA1000B**  
**Toxic Vapor Analyzer**



**The Only Portable Intrinsically Safe Dual PID/FID Analyzer**





## Portable Toxic Vapor Analyzer

The Thermo Scientific TVA1000B is the only over-the-shoulder portable vapor analyzer that offers both PID (Photo Ionization Detection) and FID (Flame Ionization Detection) in a single, easy-to-use instrument. The ability to utilize both technologies in this field proven instrument provides benefits in reduced weight and a single user interface. The user can easily monitor and log inorganic and organic vapors simultaneously.

### FID Detection

Users can measure a wide variety of organic vapors over an impressive dynamic range (0-50,000 ppm), monitoring some compounds that the PID will not detect. The flame ionization detector operates by breaking hydrocarbon bonds and is not limited by a low ionization potential of the molecule.

### Simultaneous FID/PID Detection

No other instrument offers both Photo Ionization and Flame Ionization Detection operating simultaneously in a single portable vapor analyzer. Dual detection eliminates the time, expense and trouble of purchasing and maintaining two separate analyzers.

With PID detection, the user has not only the ability to monitor for organic compounds, but also can detect many inorganic compounds. Some compounds detected by PID and not FID are ammonia, carbon disulfide, carbon tetrachloride, formaldehyde, and hydrogen sulfide. The PID also has the advantage of not requiring fuel or air to operate. In anaerobic environments, the TVA1000B PID can be used.

## Key Features

- Simultaneous FID/PID or Single FID detector(s)
- Portable and lightweight
- Multiple response factors and curves
- Multi-point calibration
- On-board datalogging
- 8 hour battery life

## Probe Options

### Standard Probe

Display measurement values on a 4-character LCD, with measurement units displayed on %, ppm, or ppb. Additionally, a bar graph indicator provides an indication of concentration level. Function keys allow selection of analyzer functions.

### Enhanced Probe

Originally designed for Fugitive Emissions monitoring, the enhanced probe has a larger display area than the basic probe. This provides a display of up to 6 lines x 20 characters, plus a double height concentration value. It displays all the same information as the standard probe and has menu-driven access to many of the analyzer functions, allowing them to be easily initiated and/or changed at the probe.





## **TVA1000B Data Manager Accessory: Route Management Probe**

### **Powerful field capabilities**

The TVA1000B Data Manager allows users to modify or create route data in the field, eliminating the need for manual recording of data. This helps you comply with the electronic data storage requirements within most consent decrees. The probe has a highly visible 360 degree LED with a pulsed rate linked to concentration.

The DataManager provides access to all of the features previously available only through the sidepack. Users can also easily search and navigate between tags in a route by simply entering the desired tag identifier.

### **Flexibility and control**

The DataManager allows control of how data is viewed and accessed in the field. This allows the user to customize the view to best meet the monitoring needs at your facility, as each route may have different fields and screen displays. Fields may be designated as non-editable to enhance data integrity and database security.

An optional comment field allows the user to make electronic notes about each tag monitored. An alpha-numeric keypad makes data entry a snap.

### **Key Features for the DataManager**

- Custom field labels for more clearly identified route information
- Definable screen layouts optimize user efficiency
- Pick lists lead to consistent data entry and minimize chance of data entry errors
- One button selections to access most commonly used functions
- New sample probe provides 360 degree visual indicator of concentration level
- Cable management system eliminates snagging sample line and electronic cable
- Existing TVA1000 units may be upgraded
- Enhanced filtering system removes dirt and water more efficiently.



Analyzer bag protects TVA1000 and may be used with standard shoulder strap or optional framed backpack

### **ThermoConnect Software**

ThermoConnect enables users of the TVA1000B to transfer, display, analyze, and configure data from the instrument using a computer. ThermoConnect is Windows® based and facilitates the importing of data into other Windows® based applications making it easier to retrieve logged data.

### **Added capability to maximize the TVA DataManager's features**

ThermoConnect has been updated with a powerful new utility to create new route database template files. This utility allows you to easily build your own route database and design the screen appearance through a four-step process. Also, any existing route files in the old file format are still recognized by the TVA and may be upgraded to the new format.

Windows® is a registered trademark of Microsoft Corporation.



Complete DataManager System

## **Applications**

### **Fugitive Emissions Monitoring**

The unique dual detector FID/PID design can handle a wide range of compound vapors present at processing plants. The TVA1000B permits monitoring at lower ppm levels.

### **Emergency Response**

For reliable measurements of hazardous spills or emissions, the TVA1000B responds quickly in an emergency. The ability to quickly detect the presence of "hot spots" is key to locating the source of the hazard.

### **Hazardous Waste Site Evaluation**

The TVA1000B allows quick and easy identification of the hazard location and quantifies the level of contamination.

### **Underground Storage Tanks**

The TVA1000B is a primary tool for determining if a UST is leaking and the extent of the contamination.

### **Industrial Hygiene**

The TVA1000B can help you maximize the effectiveness of your plant ventilation system, and identifies trouble spots. Use it to survey ambient vapor levels in specific breathing zones or in general plant environments, and log for further follow-up action.

### **Natural Gas Leak Detection**

The TVA1000B enables quick and easy detection of natural gas leaks.

The Thermo Scientific **TVA1000B** is a benchmark for experience and reliability in Fugitive Emissions Monitoring



## Thermo Scientific TVA1000B Specifications

<b>Safety certifications</b>	FM (Class 1, Div. 1, Groups A,B,C&D Hazardous Location, Temp. Class T4)
<b>Datalogging</b>	Onboard
<b>Readout</b>	Bar graph & 4- digit LCD
<b>Dynamic Range</b>	0.5-2,000 ppm (PID) isobutylene; 0.5-50,000 ppm (FID) methane
<b>Linear Range</b>	0.5-500 ppm (PID) isobutylene; 0.5-10,000 ppm (FID) methane
<b>Response Time</b>	3.5 seconds
<b>Minimum Detectable Limit</b>	100 ppb benzene (PID); 300 ppb hexane (FID) (laboratory conditions)
<b>Alarms</b>	Low, high, STEL
<b>Sample Flow Rate</b>	1,000 cc/min nominal
<b>Power</b>	Rechargeable NiCd Battery
<b>Logging Capacity</b>	900-18,000 points mode specific
<b>Temperature Range</b>	0-40°C (32°F - 104°F)
<b>Fuel</b>	None required (PID); 99.995% hydrogen (FID)
<b>Portable Operation Time</b>	8 hours (with reference operating conditions)
<b>Approximate Mass</b>	5.8 kg (13 pounds)
<b>Nominal Dimensions</b>	13.5 x 10.3 x 3.2 inches (343 x 262 x 81 mm)
<b>Analog Output</b>	0-2V dc (non-calibrated)
<b>Repeatability</b>	+/- 1% (PID); +/- 2% (FID)
<b>Autoranging</b>	Yes
<b>Diagnostics</b>	Yes
<b>Other Available Options:</b>	
Carrying Case	P/N CR012XL
Charcoal Filter	P/N 510095-1
FID Calibration Kit	P/N CR009UY
PID/FID Calibration Kit	P/N CR012UH

Thermo Scientific products represent a broad range of high-end analytical instruments, chemistry and consumable supplies, laboratory equipment, software and services that enable integrated laboratory workflow solutions. Thermo Scientific is the new name for a trusted brand – Thermo Electron – that the world's most renowned researchers, clinicians and scientists already count on to solve their analytical challenges. The brand is strengthened by the additions equipment, consumables and reagents acquired from Fisher Scientific.



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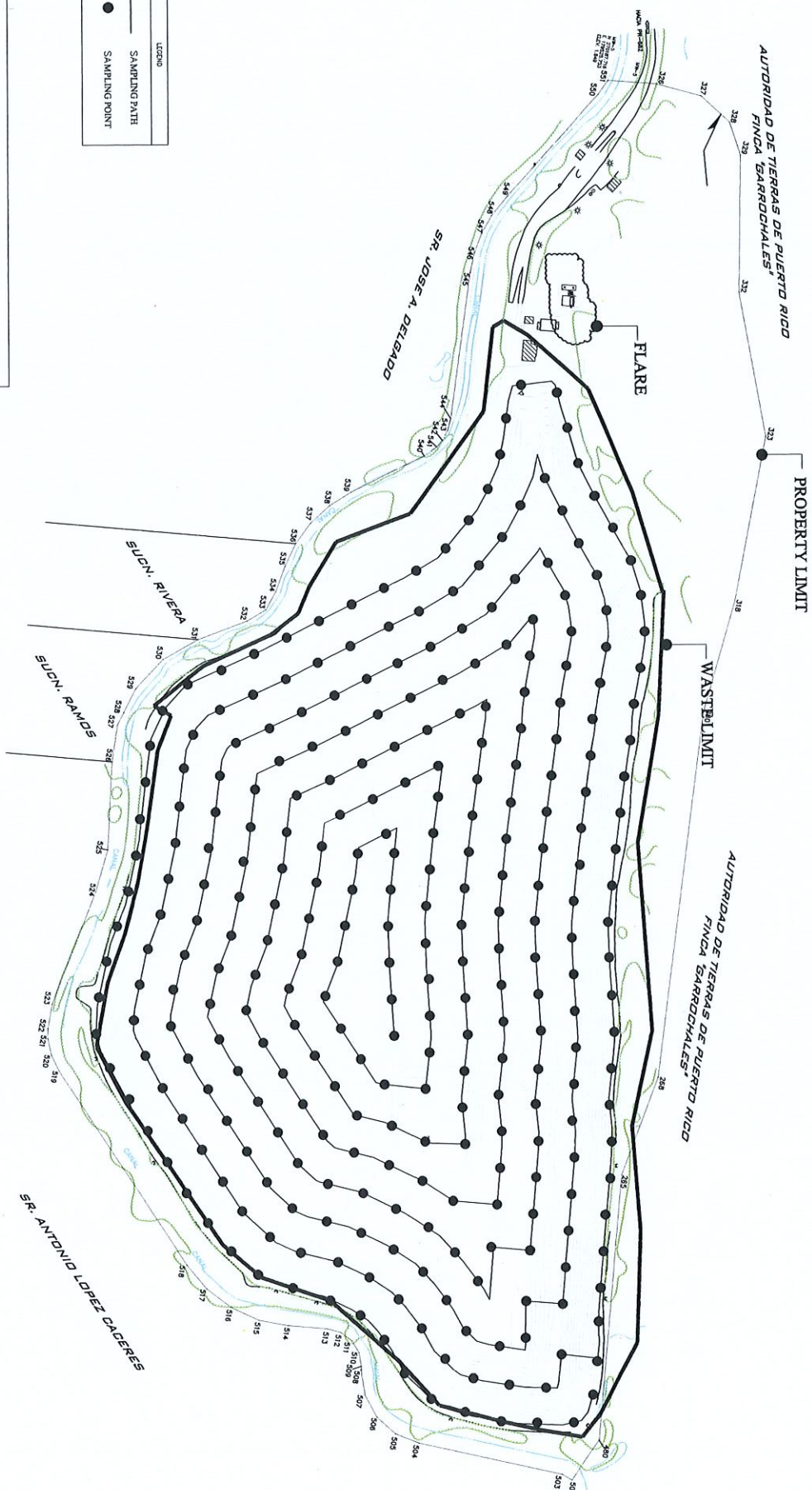




LANDFILL TECHNOLOGIES OF ARECIBO, LLC

## **APPENDIX B**

Sampling Points Locations from Arecibo Municipal Landfill



LEGEND
SAMPLE PATH
SAMPLE POINT

NOTES
1. SPM PATH SHOWN IS FOR PAUL GRADES. SPM CONDUCTED WHILE THE LANDFILL IS AT INTERIM GRADES MAY VARY FROM THE PATH SHOWN. RECORDS OF THE PATH FOLLOWED WILL BE MAINTAINED BY THE FACILITY.
2. SPM PATH WILL BE SPACED 30 M APART IN ACCORDANCE WITH HHS RULES.

REVISION
DATE
BY
#



ARECIBO MUNICIPAL SOLID WASTE LANDFILL
ARECIBO, P.R.
SURFACE EMISSIONS MONITORING
SAMPLE PATH
DRAWING
S-100
DATE
01/2010





**Land-Tech**

LANDFILL TECHNOLOGIES OF ARECIBO, LLC

## **APPENDIX C**

### Surface Emission Readings

**LANDFILL TECHNOLOGIES CORP.**

SURFACE EMISSION MONITORING – ARECIBO LANDFILL

**DECEMBER 2017**

TAG	DETECTOR	CONCENTRATION	CONCENTRATION UNITS	TYPE
UPWIND	FID	1.96	PPM	OK
DOWNWIND	FID	1.94	PPM	OK
POINT1	FID	3.14	PPM	OK
POINT2	FID	3.12	PPM	OK
POINT3	FID	3.31	PPM	OK
POINT3	FID	3.48	PPM	OK
POINT4	FID	3.39	PPM	OK
POINT5	FID	3.26	PPM	OK
POINT6	FID	3.14	PPM	OK
POINT7	FID	3.18	PPM	OK
POINT8	FID	3.24	PPM	OK
POINT9	FID	3.25	PPM	OK
POINT10	FID	3.34	PPM	OK
POINT11	FID	14.63	PPM	OK
POINT12	FID	13.37	PPM	OK
POINT13	FID	4.97	PPM	OK
POINT15	FID	6.5	PPM	OK
POINT16	FID	4.2	PPM	OK
POINT17	FID	3.89	PPM	OK
POINT18	FID	5.57	PPM	OK
POINT19	FID	4.15	PPM	OK
POINT20	FID	3.16	PPM	OK
POINT21	FID	3.51	PPM	OK
POINT22	FID	3.37	PPM	OK
POINT22	FID	3.37	PPM	OK
POINT23	FID	3.1	PPM	OK
POINT24	FID	3.1	PPM	OK
POINT25	FID	3.2	PPM	OK
POINT26	FID	3.61	PPM	OK
POINT27	FID	3.24	PPM	OK
POINT28	FID	4.44	PPM	OK
POINT29	FID	15.37	PPM	OK
POINT30	FID	10.89	PPM	OK
POINT31	FID	7.67	PPM	OK
POINT33	FID	6.74	PPM	OK
POINT34	FID	4.4	PPM	OK
POINT35	FID	4.39	PPM	OK
POINT36	FID	3.93	PPM	OK



**LANDFILL TECHNOLOGIES CORP.**

SURFACE EMISSION MONITORING – ARECIBO LANDFILL

**DECEMBER 2017**

<b>TAG</b>	<b>DETECTOR</b>	<b>CONCENTRATION</b>	<b>CONCENTRATION UNITS</b>	<b>TYPE</b>
POINT37	FID	3.61	PPM	OK
POINT38	FID	3.85	PPM	OK
POINT39	FID	3.25	PPM	OK
POINT40	FID	4.98	PPM	OK
POINT41	FID	4.61	PPM	OK
POINT42	FID	5.27	PPM	OK
POINT43	FID	5.7	PPM	OK
POINT44	FID	5.31	PPM	OK
POINT45	FID	4.06	PPM	OK
POINT46	FID	3.06	PPM	OK
POINT47	FID	5.16	PPM	OK
POINT48	FID	3.7	PPM	OK
POINT49	FID	3.63	PPM	OK
POINT50	FID	3.54	PPM	OK
POINT51	FID	4.42	PPM	OK
POINT52	FID	3.6	PPM	OK
POINT53	FID	3.34	PPM	OK
POINT54	FID	3.44	PPM	OK
POINT55	FID	4.36	PPM	OK
POINT56	FID	4.1	PPM	OK
POINT57	FID	11.04	PPM	OK
POINT58	FID	14.62	PPM	OK
POINT59	FID	17.47	PPM	OK
POINT60	FID	18.16	PPM	OK
POINT61	FID	23.12	PPM	OK
POINT62	FID	24.78	PPM	OK
POINT63	FID	28.19	PPM	OK
POINT64	FID	29.58	PPM	OK
POINT65	FID	34.26	PPM	OK
POINT66	FID	29.92	PPM	OK
POINT67	FID	30.56	PPM	OK
POINT68	FID	31.98	PPM	OK
POINT69	FID	33.12	PPM	OK
POINT70	FID	35.3	PPM	OK
POINT71	FID	33.78	PPM	OK
POINT72	FID	32.54	PPM	OK
POINT73	FID	35.92	PPM	OK
POINT74	FID	18.35	PPM	OK

**LANDFILL TECHNOLOGIES CORP.**

SURFACE EMISSION MONITORING – ARECIBO LANDFILL

**DECEMBER 2017**

<b>TAG</b>	<b>DETECTOR</b>	<b>CONCENTRATION</b>	<b>CONCENTRATION UNITS</b>	<b>TYPE</b>
POINT75	FID	6.67	PPM	OK
POINT76	FID	4.48	PPM	OK
POINT77	FID	8.3	PPM	OK
POINT78	FID	6.42	PPM	OK
POINT79	FID	7	PPM	OK
POINT80	FID	5.58	PPM	OK
POINT81	FID	3.46	PPM	OK
POINT82	FID	3.95	PPM	OK
POINT83	FID	3.35	PPM	OK
POINT84	FID	3.46	PPM	OK
POINT85	FID	9.52	PPM	OK
POINT86	FID	34.81	PPM	OK
POINT87	FID	23.93	PPM	OK
POINT88	FID	15.53	PPM	OK
POINT89	FID	15.6	PPM	OK
POINT90	FID	14.79	PPM	OK
POINT91	FID	21.37	PPM	OK
POINT92	FID	19.06	PPM	OK
POINT93	FID	10.94	PPM	OK
POINT94	FID	17.33	PPM	OK
POINT95	FID	19.87	PPM	OK
POINT96	FID	21.39	PPM	OK
POINT97	FID	21.75	PPM	OK
POINT98	FID	26.93	PPM	OK
POINT99	FID	31.91	PPM	OK
POINT100	FID	30.15	PPM	OK
POINT101	FID	30.64	PPM	OK
POINT102	FID	36.48	PPM	OK
POINT103	FID	34.62	PPM	OK
POINT104	FID	36.12	PPM	OK
POINT105	FID	33.16	PPM	OK
POINT106	FID	29.71	PPM	OK
POINT107	FID	30.11	PPM	OK
POINT108	FID	30.33	PPM	OK
POINT109	FID	30.03	PPM	OK
POINT110	FID	25.53	PPM	OK
POINT111	FID	24.92	PPM	OK
POINT112	FID	23.84	PPM	OK



**LANDFILL TECHNOLOGIES CORP.**

SURFACE EMISSION MONITORING – ARECIBO LANDFILL

**DECEMBER 2017**

<b>TAG</b>	<b>DETECTOR</b>	<b>CONCENTRATION</b>	<b>CONCENTRATION UNITS</b>	<b>TYPE</b>
POINT113	FID	16.82	PPM	OK
POINT114	FID	18.6	PPM	OK
POINT115	FID	18.91	PPM	OK
POINT116	FID	22.68	PPM	OK
POINT117	FID	23.68	PPM	OK
POINT118	FID	22.17	PPM	OK
POINT119	FID	23.24	PPM	OK
POINT120	FID	22.77	PPM	OK
POINT121	FID	22.75	PPM	OK
POINT122	FID	22.99	PPM	OK
POINT123	FID	21.28	PPM	OK
POINT124	FID	18.7	PPM	OK
POINT125	FID	18.45	PPM	OK
POINT126	FID	16.03	PPM	OK
POINT127	FID	8.65	PPM	OK
POINT128	FID	6.45	PPM	OK
POINT129	FID	7.84	PPM	OK
POINT130	FID	8.88	PPM	OK
POINT131	FID	8.66	PPM	OK
POINT132	FID	8.94	PPM	OK